

April 10, 1995
File No. 31030.00

Mr. Dennis aRusso, Environmental Manager
R.I. Solid Waste Management Corporation
Central Landfill
65 Shun Pike
Johnston, Rhode Island 02919



Re: Central Landfill Operable Unit 2 RI/FS
Progress Report No. 3
Work Period: March 10 to April 10, 1995

140 Broadway
Providence
Rhode Island 02903
401-421-4140
FAX 401-751-8613

Dear Dennis:

This letter with attachments serves as the third progress report prepared by GZA Geoenviromental, Inc (GZA) associated with activities completed to date on the Central Landfill Operable Unit 2 Remedial Investigation/Feasibility Study (RI/FS). This progress report has been prepared in accordance with the requirements of Section 37 of the Administrative Order by Consent, U.S. EPA Docket No. I-87-1016. We prepared this letter on behalf of the RISWMC in accordance with the terms and conditions of our July 9, 1992 Environmental Engineering Consulting Services Contract.

Please do not hesitate to call me at ext. 320 with any questions or comments regarding this information.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

A handwritten signature in black ink, appearing to read 'E. Summerly'.

Edward A. Summerly, P.G.
Project Manager

A Subsidiary of GZA
GeoEnvironmental
Technologies, Inc.

EAS:pab

Attachments: Progress Report No. 3
Summary Table

Mr. James Brown/USEPA (3 copies)
Ms. Becky Cleaver/HNUS (1 copy)
Mr. Warren Angel/RIDEM (2 copies)

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PROGRESS MADE THIS REPORTING PERIOD



Deliverables/Correspondence/Meetings

The following deliverables were submitted to EPA and RIDEM by GZA on RISWMC's behalf:

- "Work Plan for Stream Flow Measurements - OU2 Task 3" was submitted on March 29, 1995.

RISWMC is currently awaiting EPA's review/approval of this document, the "Operable Unit 2 Remedial Investigation Draft Work Plan Response Summary" submitted on February 17, 1995 and the "Draft Feasibility Study Work Plan - Operable Unit 2" submitted on March 9, 1995.

Additionally, the March 1995 progress report contained a schedule for the Phase I OU2/RI Tasks. RISWMC anticipates that EPA will provide comments or approval of this proposed schedule in the near future. RISWMC will operate in accordance with the proposed schedule until otherwise directed.

On April 4, 1995 the EPA approved RISWMC's request that they be allowed to perform the OU2 Risk Assessment. RISWMC has requested the GZA assist them in project planning and preparation of an OU2 Risk Assessment Work Plan.

Operable Unit 2/Task 4 Well Installations

The drilling contractor remobilized to the site with the packer testing/well installation rig on March 8, 1995. . The contractor proceeded to remove accumulated debris from MW95-47 and install a monitoring well at this location. The monitoring well was screened from 51 feet to 41 feet with centered within a fourteen foot sand pack.

Development of MW95-ML9 prior to in situ testing began on March 10, 1995. A total of 870 gallons of water was purged from the deep boring using a combination of pumping and surging the borehole to reach a final turbidity level below 20 NTU. March 13th and 14th were spent re-configuring the packers to a ten foot testing interval, testing the new configuration and setting the packer assembly to the bottom of MW95-ML9. EPA oversight was provided during this time by Mike Healy of HNUS. From March 13, through March 21, 1995, GZA packer permeability tested and collected discrete zone

groundwater samples from MW95-ML9, and upon completion of packer testing, the contractor purged a volume of water equal to that lost to the formation during testing. Field screening, gas chromatograph screening, and hydraulic conductivity test results are provided on the attached table. GZA is evaluating the VOC screening, geophysical analysis and hydraulic conductivity testing and will submit recommendation to EPA regarding the placement of wells within this hole.



As detailed in Progress Report #2, GZA discovered borehole MW95-52 caved-in for a second time. Consequently, the boring had to be redrilled prior to any further testing or well installation. Due to the potential for additional borehole collapse, GZA did not attempt to packer test MW95-52. After reviewing of the log for MW95-52, and discussing our previous recommendations regarding well screen placement with the EPA, GZA mobilized an auger rig to the site on March 21, 1995 to ream out the accumulated debris and install a monitoring well in the boring. The well screen was installed to span the most likely water bearing fractures encountered at depths of 20 to 22 feet, 31 to 32 feet and 38 feet. This installation should adequately meet the functional requirements for future piezometric and water quality monitoring at this location.

UPCOMING EVENTS/ACTIVITIES

Meetings

A meeting, between RISWMC, EPA and the GZA RI and RA project teams, has tentatively been scheduled for April 26, 1995 at 10 am to be held at RISWMC's offices in Johnston, Rhode Island. The purpose of the meeting is to discuss and finalize, to the extent possible, the scope of the Phase I OU2/RI and the OU2/RA.

Field Activities

OU2/Task 4 - Well Installations. Field activities for this task will continue into the next reporting period and will likely include the following:

- GZA is evaluating the VOC screening, geophysical analysis and hydraulic conductivity testing data and will submit recommendation to EPA regarding the placement of wells within this hole.
- Deep Borehole Well Installation - anticipated start date is May 1, and completion date is May 3, 1995.
- "As-built" survey of exploration locations - anticipated completion the week of May 8, 1995.

Please note that field activities are highly dependant on the weather and the availability of subcontractors and equipment and are thus subject to change. We will notify EPA and RIDEM as such changes become evident.

KEY PERSONAL CHANGES



No substitutions have been made to the GZA project team, however, the risk assessment group has been expanded to include Gregg McBride as technical reviewer. The team remains: for the OU2 RI/FS Michael Powers is the Principal in Charge and technical reviewer for the RI, Edward Summerly is the Project Manager for the RI/FS/RA projects and technical lead on the RI project, Douglas Larson is the technical lead on the FS project, Albert Ricciardelli is the technical reviewer for the FS, Lisa Camp is the Human Health risk assessment specialist, Timothy Briggs is the wetlands and ecological risk assessment specialist, Stephen Kline and Matthew Bellisle are the project engineers, and Mark Dalpe is the project field geologist.

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SUMMARY OF PACKER TESTING AND GC SCREENING RESULTS

Central Landfill - March 21, 1995

WELL / ZONE ID	ZONE LENGTH	DATE SAMPLED	FIELD SCREENING RESULTS				GC SCREENING RESULTS			HYDRAULIC CONDUCTIVITY	NOTES
			pH	SPEC. COND.	TURBIDITY	TVOC	BENZENE	TOLUENE	CHLOROBENZENE		
MW95-47 / ZONE 1	33.0' TO 52.0'	6-Feb-95	6.73	2160	100	ND	TRACE (13)	ND@5	97	>6 ft/day	5
MW95-47 / ZONE 2	35.5' TO 52.0'	6-Feb-95	6.73	1930	55	ND	ND@5	ND@5	97	>7 ft/day	
MW95-47 / ZONE 3	43.0' TO 52.0'	6-Feb-95	6.72	2090	10	ND	ND@5	ND@5	64	>17 ft/day	
MW95-48 / ZONE 1	60.2' TO 66.8'	3-Feb-95	6.89	220	-----	ND	ND@5	ND@5	ND@10	0.15 - 0.18 ft/day	
MW95-48 / ZONE 2	58.3' TO 61.3'	3-Feb-95	7.20	780	-----	0.50	ND@5	67	TRACE (27)	<0.06 - 0.16 ft/day	
MW95-48 / ZONE 3	51.8' TO 56.8'	3-Feb-95	7.30	800	-----	1.00	ND@5	TRACE (27)	TRACE (23)	<0.02 - 0.05 ft/day	
MW95-48 / ZONE 4	45.8 TO 51.8	3-Feb-95	7.10	960	-----	ND	ND@5	38	BMDL	<0.02 ft/day	
MW95-48 / ZONE 5	37.8' TO 42.8	3-Feb-95	6.50	330	-----	ND	ND@5	ND@5	ND@10	0.5 - 0.6 ft/day	
MW95-49 / ZONE 1	40.2' TO 48.5'	1-Feb-95	-----	-----	-----	ND	ND@5	59	ND@10	<0.01 ft/day	
MW95-49 / ZONE 2	35.8' TO 40.8'	1-Feb-95	-----	-----	-----	-----	-----	-----	-----	0.05 ft/day	
MW95-49 / ZONE 3	31.1' TO 36.1'	1-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.01 ft/day	
MW95-49 / ZONE 4	28.8' TO 31.8'	1-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.02 ft/day	
MW95-49 / ZONE 5	22.1' TO 27.1'	1-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.01 ft/day	
MW95-49 / ZONE 6	18.0' TO 22.0'	2-Feb-95	6.50	60	-----	ND	ND@5	41	ND@10	0.5 ft/day	5
MW95-50 / ZONE 1	61.0' TO 69.8'	7-Feb-95	7.10	180	40	ND	ND@5	48	ND@10	0.01 ft/day	
MW95-50 / ZONE 2	55.5' TO 61.5'	7-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.02 ft/day	
MW95-50 / ZONE 3	52.0' TO 57.0'	7-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.02 ft/day	
MW95-50 / ZONE 4	47.5' TO 52.5'	8-Feb-95	8.10	140	5	ND	ND@5	ND@5	ND@10	<0.01 ft/day	
MW95-50 / ZONE 5	43.0' TO 48.0'	8-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.01 ft/day	
MW95-50 / ZONE 6	38.5' TO 43.5'	8-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.01 ft/day	
MW95-50 / ZONE 7	34.0' TO 39.0'	8-Feb-95	-----	-----	-----	-----	-----	-----	-----	0.01 ft/day	
MW95-50 / ZONE 8	29.5' TO 34.5'	8-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.01 ft/day	

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			pH	SPEC. COND.	TURBIDITY	TVOC	BENZENE	TOLUENE	CHLOROBENZENE		
MW95-50 / ZONE 9	25.0' TO 30.0'	8-Feb-95	-----	-----	-----	-----	-----	-----	-----	0.01 ft/day	
MW95-51 / ZONE 1	37.3' TO 45.5'	9-Feb-95	7.20	180	35	ND	ND@5	TRACE(0.5)	ND@10	0.13 - 0.22 ft/day	
MW95-51 / ZONE 2	33.0' TO 38.0'	9-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.08 ft/day	
MW95-51 / ZONE 3	28.5' TO 33.5'	9-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.06 ft/day	
MW95-51 / ZONE 4	24.0' TO 29.0'	10-Feb-95	-----	-----	-----	-----	ND@5	ND@5	ND@10	<0.02 ft/day	
MW95-51 / ZONE 5	19.5' TO 24.5'	10-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.02 ft/day	
MW95-51 / ZONE 6	15.0' TO 19.0'	10-Feb-95	-----	-----	-----	-----	-----	-----	-----	<0.03 ft/day	5
MW95-ML9 / ZONE 1	297.4' TO 310.5'	14-Mar-95	8.65	270	----	ND	ND@5	BMDL	ND@10	0.004 ft/day	
MW95-ML9 / ZONE 2	288.1' TO 296.1'	15-Mar-95	7.85	250	----	0.20	ND@5	40	BMDL	0.004 ft/day	
MW95-ML9 / ZONE 4	288.4' TO 278.4'	15-Mar-95	9.16	140	----	0.20	ND@5	BMDL	ND@10	0.003 ft/day	
MW95-ML9 / ZONE 5	254' TO 264'	15-Mar-95	----	----	----	----	----	----	----	0.004 to 0.01 ft/day	6
MW95-ML9 / ZONE 6	249' TO 259'	15-Mar-95	9.12	160	----	ND	ND@5	TRACE(12)	ND@10	0.007 to 0.009 ft/day	
MW95-ML9 / ZONE 7	242.4' TO 252.4'	16-Mar-95	9.14	140	----	ND	ND@5	TRACE(0.5)	ND@10	0.014 ft/day	7
MW95-ML9 / ZONE 8	233.5' TO 243.5'	16-Mar-95	7.34	120	----	ND	ND@5	TRACE(0.3)	ND@10	0.007 ft/day	7
MW95-ML9 / ZONE 9	226.0' TO 236.0'	16-Mar-95	7.70	100	----	ND	ND@5	BMDL	ND@10	0.003 ft/day	7
MW95-ML9 / ZONE 10	218.5' TO 226.5'	16-Mar-95	7.09	120	----	ND	ND@5	TRACE(0.0)	ND@10	0.003 ft/day	7
MW95-ML9 / ZONE 15	188.1' TO 278.1'	17-Mar-95	7.30	120	----	ND	ND@5	TRACE(12)	ND@10	<0.02 ft/day	7
MW95-ML9 / ZONE 17	149.1' TO 159.1'	20-Mar-95	7.36	120	----	ND	ND@5	BMDL	ND@10	<0.02 to 0.025 ft/day	7,8
MW95-ML9 / ZONE 18	145.0' TO 155.0'	20-Mar-95	7.84	180	----	0.20	ND@5	BMDL	ND@10	<0.07 to 0.10 ft/day	7,8
MW95-ML9 / ZONE 19	134.0' TO 144.0'	20-Mar-95	7.65	150	----	ND	ND@5	ND@5	ND@10	<0.17 to 0.31 ft/day	8
MW95-ML9 / ZONE 20	124.0' TO 134.0'	20-Mar-95	8.05	110	----	ND	ND@5	ND@5	ND@10	0.014 to 0.020 ft/day	
MW95-ML9 / ZONE 21	114.5' TO 124.5'	20-Mar-95	7.90	180	----	ND	ND@5	BMDL	ND@10	<0.19 to 0.26 ft/day	7,8

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			pH	SPEC. COND.	TURBIDITY	TVOC	BENZENE	TOLUENE	CHLOROBENZENE		
MW95-ML9 / ZONE 22	103.8' TO 113.8'	21-Mar-95	7.80	130	----	ND	----	----	----	<0.06 to 0.23 ft/day	5, 9
MW95-ML9 / ZONE 23	94.2' TO 104.2'	21-Mar-95	7.86	130	----	ND	----	----	----	<0.046 to 0.077 ft/day	5, 9
MW95-ML9 / ZONE 24	85.0' TO 95.0'	21-Mar-95	7.72	190	----	ND	----	----	----	<0.29 to 0.43 ft/day	5, 9
MW95-ML9 / ZONE 25	82.5' TO 91.0'	21-Mar-95	8.08	110	----	ND	ND @ 5	ND @ 5	ND @ 10	0.29 to 0.36 ft/day	5, 7

NOTES:

- 1- ANALYTICAL SAMPLES WERE TAKEN FROM ZONES WHICH APPEARED TO HAVE MEASURABLE HYDRAULIC CONDUCTIVITIES BASED ON OBSERVATIONS MADE DURING PUMPING. (RESULTS ARE REPORTED IN PPB - ug/L)
- 2- ANALYTICAL NOTES:
TRACE = DETECTED AT CONCENTRATIONS WHICH ARE ONE TO THREE TIMES THE DETECTION LIMIT. PARENTHESES CONTAINS ESTIMATED CONCENTRATIONS.
ND @ = NOT DETECTED AT THE GIVEN DETECTION LIMIT.
BMDL = DETECTED AT BELOW THE QUANTIFIABLE DETECTION LIMIT.
- 3- ZONE LENGTH MEASUREMENTS REFERENCED TO GROUND SURFACE AFTER CORRECTING FOR CASING STICK-UP.
THESE WERE:

MW95-47 = 1.0 FEET	MW95-51 = 1.0 FEET
MW95-48 = 1.2 FEET	MW95-ML9 = 1.4 FEET
MW95-49 = 1.0 FEET	
MW95-50 = 1.0 FEET	
- 4- BOREHOLE MW95-52 WAS NOT PACKER TESTED PRIOR TO WELL INSTALLATION BECAUSE IT CAVED-IN ON INSTRUMENTS ON TWO SEPARATE OCCASIONS.
- 5- TEST ZONE WHICH SPANS THE CASING/BOREHOLE INTERFACE WITH THE TOP PACKER INFLATED ENTIRELY WITHIN THE CASING.
- 6- MW95-ML9/ZONE 6 WAS NOT SAMPLED BECAUSE IT APPEARED THAT THE ZONE WOULD NOT PRODUCE WATER DURING PURGING.
- 7- GAS CHROMATOGRAPHIC SCREENING RESULTS DETECTED TRACE LEVELS OF VARIOUS LATE ELUTING, UNKNOWN COMPOUNDS IN SAMPLES.
ONE UNKNOWN DETECTED IN MW95-ML9/ZONES 7, 8, 9, 10, 15, 17, 18, 21 AND 25 IS TENTATIVELY IDENTIFIED AS METHANOL (a laboratory artifact).
ADDITIONAL NUMBERS OF UNKNOWN DETECTED:

MW95-ML9/ZONE 8 = 1 UNKNOWN	MW95-ML9/ZONE 18 = 3 UNKNOWN
MW95-ML9/ZONE 9 = 2 UNKNOWN	MW95-ML9/ZONE 25 = 2 UNKNOWN
MW95-ML9/ZONE 10 = 3 UNKNOWN	
- 8- OBSERVED VERTICAL LEAKAGE AROUND THE PACKER.
CALCULATED VERTICAL HYDRAULIC CONDUCTIVITY IN MW95-ML9 RANGED FROM 0.002 TO 0.016 FT/DAY.
- 9- SAMPLES WERE COLLECTED FROM ZONES 22, 23, AND 24 BUT WERE NOT ANALYZED DUE TO DAMAGE DURING STORAGE.